



South Dakota Board of
Technical Education

December 8, 2021

Lake Area Technical College
1201 Arrow Ave NE
Watertown, SD 57201

RE: Approval of Lake Area Technical College's Proposed Associate of Applied Science Option (AASO) in Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV)

To whom it may concern:

After review, the Executive Director has approved Lake Area Technical College's Non-Substantive Program Application for an Associate of Applied Science Option (AASO) in Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV). Per Board Policy 303.3, the receipt of this letter completes the South Dakota Board of Technical Education's approval process, and the technical college may proceed with program implementation.

The Board of Technical Education's approval is valid for three years upon the date of this letter. If a technical college does not implement an approved program within three years, approval is terminated.

A technical college must update the program's profile in the Board of Technical Education's Academic Program Database by June 30 prior to the year in which students are first enrolled or at least 30 days prior to enrolling students, whichever is first.

Sincerely,

Scott DesLauriers
Deputy Director
South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 57006
Scott.DesLauriers@state.sd.us
(605) 295-7033

PROGRAM DESCRIPTION

Institution	Choose an item.
Program Identifier Code (If applicable)	AT EV
Program Title	Automotive Technology - Electric Vehicles Option
Program Award Level:	<input type="checkbox"/> Short-Term Certificate <input type="checkbox"/> Long-Term Certificate <input type="checkbox"/> Diploma <input type="checkbox"/> Associate of Applied Science <input checked="" type="checkbox"/> Associate of Applied Science Option
CIP Code (6 Digit)	47.0604
Projected Implementation Date	8/17/2022
Approved Parent Program Title (If applicable)	Automotive Technology
Approved Parent Program Identifier Code (If applicable)	AT
Location	<input checked="" type="checkbox"/> Main Campus <input type="checkbox"/> Other:

SUMMARY

Type of Non-Substantive Change	<input type="checkbox"/> Program created using subset of existing courses (B.1.1) <input checked="" type="checkbox"/> Creation of associate of applied science option (B.1.2) <input type="checkbox"/> Consolidation of existing programs (B.1.3) <input type="checkbox"/> Program award level change (B.1.4) <input type="checkbox"/> Other:
--------------------------------	---

Describe the change the institution is seeking approval of.

Lake Area Technical College is seeking approval to add an Electric Vehicles Associates of Applied Science Option to the Automotive Technology program to address the need for technicians who can service and repair electric and hybrid vehicles.

According to the South Dakota Department of Labor and Regulation, Automotive Service Technicians and Mechanics are on the Top 30 Hot Careers, with an estimated need for 244 technicians annually. The additional Hybrid, Electric, and Fuel Cell (EMV) curriculum trains students to become skilled in:

- Powertrain
- ReGen Braking
- Electric Power Steering
- Plug-in E/V
- Hybrid Fuel Cell Technology

NC3 (National Coalition of Certification Centers) and ASE (Automotive Service Excellence) industry certifications are available including AC/DC, Precision Measuring, and Alternative Fuels. This program will first be offered on campus as a program option with plans to expand to a hybrid and apprenticeship delivery models in the future.

Offering hybrid e-Degrees and Apprenticeship delivery methods help location bound students earn degrees. This will also benefit individuals who want to broaden their skill set and service electric and hybrid vehicles, as they will be required to have already obtained an Automotive Technology AAS degree in order to apply for this certificate program.

Industry support is strong. The South Dakota Auto Dealers Association recognizes that technicians of the future will need to be trained in an entirely new way and that this option will prepare students for the new electric vehicle challenges. Other support comes from leading automotive businesses in eastern South Dakota who have been in operation for 20+ years. Their letters indicate changes are happening and they believe the demand for technicians will only continue to increase in the future. Sioux Falls Ford Lincoln has already invested in becoming a certified electric Ford & Lincoln dealer. Their pre-sales for the all-new F-150 Lightning is already over 125 vehicles for the local market.

CRITERION 2: DEMAND

The program leads to meaningful employment, adequate student enrollment, and/or fulfills needs not being met by existing education and training providers.

- 2.1. The program leads to high-wage occupations that have an average/mean wage greater than the median wage across all occupations.
- 2.2. The program leads to high-demand occupations that have project annual openings (a measure of demand for workers) greater than the average across all occupations or is shown as an economic and/or labor market emerging field for the state of South Dakota and its regions.
- 2.3. The program's student enrollment is adequate to justify program existence.
- 2.4. The program fulfills a demand not being met by existing education and training providers in the region and/or state.

2.1. Describe the wage projections for occupations associated with the proposed program by completing Appendix 2.A.

2.2. Describe the demand projections for occupations associated with the proposed program.

A. Complete Appendix 2.A.

B. If an emerging field for the state of South Dakota, describe the field. Letter(s) of support, detailing demand, should be attached as appendices.

2.3. Describe projected student enrollment for the proposed program by completing Appendix 2.B.

2.4. Describe how the proposed program fulfills a demand not being met by existing education and training providers in the region and/or state.

A. Identify closely related program(s) that currently exist at other public higher education institutions in the system or state. If none, write "None."

Southeast Technical College and Western Dakota Technical College both offer high quality Automotive Technology programs. The enrollment in those programs in Fall 2020 was 52 students and 30 students respectively. Neither program offers a specialized option in Hybrid, Electric, and Fuel Cell (EMV) technology though some of the principles may be taught in the general program curriculum.

The Automotive Technology Electric Vehicles Associate of Applied Science Option at Lake Area Technical College will provide in depth knowledge of electric and hybrid vehicle service and repair culminating in industry certifications.

B. If applicable: Describe the ways in which the demand is not currently being met by the aforementioned program(s) and provide justification as to why the program should be approved by addressing the following conditions that warrant duplication ([BP 303.2](#)). Select all that apply.

- ☐ Unmet Demand (C.5.1.1)
☒ Industry Partnership (C.5.1.2)

- ☐ Increases Student Access (C.5.1.3)
☐ Other:

I. For each condition selected above, provide a brief justification.

The South Dakota Automobile Dealers Association and the Lake Area Technical College Automotive Technology program advisory board members identified the need for advanced training in electric and hybrid vehicles to ensure graduates are prepared for the technological changes in the industry. In addition, letters of support were obtained from Aberdeen Chrysler Center, Scherbenske Auto Repair, Sioux Falls Ford Lincoln, and Watertown Ford Chrysler.

CRITERION 3: DESIGN

The program's learning assessment strategy, program of study, and delivery methods are designed to provide students with the necessary competencies, as demonstrated through program learning outcomes.

- 3.1. The program is aligned to competencies, as demonstrated through program learning outcomes, that are developed with and continually validated by relevant stakeholders.
- 3.2. The program has a learning assessment strategy to validate student mastery of the program learning outcomes.
- 3.3. The program has an integrated program of study designed to develop and reinforce the program learning outcomes.
- 3.4. The program, when appropriate, includes a work-based learning component that develops and reinforces the program learning outcomes.
- 3.5. The program, when appropriate, offers flexible delivery methods to increase student access.

3.0. Describe the proposed program's alignment with the program award level requirements established in [BP 301.1](#).

A. Does the program align with the requirements?

- ☒ Yes
☐ No (Requesting Exemption)

B. If no: Provide a detailed rationale for program exemption. Specify which requirement(s) in BP 301.1 are not met; cite specific policy sections (e.g., B.3.4), when appropriate. If external organizations are involved (accreditation, regulatory, licensure, etc.), reference the organization name(s), specific requirements (including citations), and a justification for why the exemption should be approved.

N/A

3.1. Describe the program learning outcomes.

A. Provide a list of program learning outcomes for each proposed award level. Learning outcomes should be specific to the program.

The Automotive Technology Student Learning Outcomes are as follows:

1. Demonstrate proficiency in entry-level tasks in Automotive Technology within an appropriate time period.
2. Complete a customer work order.
3. Access technical information.
4. Demonstrate environmental responsibility.

The program objectives are as follows:

1. Develop diagnosis and repair procedures for electric & hybrid vehicles.
2. Demonstrate electric vehicle & hybrid safety and service procedures.
3. Describe electric vehicle & hybrid batteries and service as well as electric vehicle & hybrid electric motors, generators, and controls.
4. Describe regenerative braking systems as well as electric vehicle & hybrid powertrains and powersteering.

B. Describe the how the program learning outcomes were developed and validated.

The Automotive Technology Department Instructors developed the program learning outcomes utilizing their industry expertise and experience. The learning outcomes were presented to Advisory Board members for their input (and validation) on the knowledge and skills service technicians and mechanics need to perform upon entering the workforce. The learning outcomes are reviewed annually at the fall program advisory board meetings.

Craig Van Batenburg is considered the leading authority in the education of technicians in electric vehicles and has been teaching extensive hands-on hybrid technology since 2000 and EV technology since 2008. In 2019, the Automotive Career Development Center developed and piloted the College Level EMV Textbook along with the training program. Input from Craig's website and other resources informed development of the program's outcomes and validated what technicians should be able to perform when entering the workforce.

<https://www.fixhybrid.com/acdc-college-level-emv-text-book/>

The Academic Assessment Program at Lake Area Technical College annually validates all program learning outcomes using an assessment matrix, program dashboards, and strategic planning.

3.2. Describe the program's learning assessment strategy.

- A. Describe how students will demonstrate mastery of the program learning outcomes. Description should be specific to the program's learning assessment plan vs. the institutional assessment plan.

Students will demonstrate mastery of student learning outcomes through a variety of formative and summative assessments. These include locally developed course tests, nationally developed curriculum assessments, and demonstrations in a live shop environment, such as writing work orders, performing diagnostic tests on trainers, and written tests. Post-graduation surveys conducted by employers and our placement report also help to determine the success of the program's graduates.

The Academic Assessment Program at Lake Area Technical College annually evaluates mastery of all program learning outcomes using an assessment matrix, program dashboards, and strategic planning. Program Assessment Mentors (PAMs) visit with each program following the school year to review course & program surveys, achievement of student learning outcomes, and examine the program's dashboard. Instructors develop a plan for the next year focusing on areas identified for improvement.

- B. Is the program preparation for a professional licensure and/or certification examination?

- ☒ Yes (Detail in Appendix 4: Section 3)
☐ No

3.3. Describe the program of study by completing Appendix 3.

3.4. Describe the program's work-based learning component.

- A. Does the program have a work-based learning component? If so, select all that apply.

- | | |
|---|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Clinical |
| <input type="checkbox"/> Apprenticeship | <input type="checkbox"/> Capstone |
| <input type="checkbox"/> Internship or Externship | <input checked="" type="checkbox"/> Other: Work based learning experiences in a live shop environment. |

- B. If none, describe why.

N/A

3.5. Describe the program's delivery methods.

- A. Select the program's primary delivery method(s)¹. Select all that apply.

- | | |
|---|--|
| <input checked="" type="checkbox"/> On Campus | <input checked="" type="checkbox"/> Apprenticeship |
| <input type="checkbox"/> Online | <input type="checkbox"/> Other: |
| <input checked="" type="checkbox"/> Blended | |

¹ **In Person:** 100 percent of courses are available in-person. **Online:** 100 percent of courses are available via distance learning. Delivery is only via the Internet. **Blended:** Delivery includes a required combination of both in-person and online courses. If a student has the option to take courses online, but is not required to do so, the program is not necessarily considered blended.

B. Describe how flexible delivery methods are being leveraged to increase student access.

Lake Area Technical College plans to start the program as an on campus Automotive Technology Associate of Applied Science option. Future plans are to offer it in a blended and apprenticeship format.

Thirteen programs at Lake Area Technical College provide the flexibility of an E-Degree or a Blended delivery method. An E-Degree provides an education that is innovative and flexible, with built-in convenience. Classes are completed through a combination of online courses with time on campus for crucial hands-on training. The on campus curriculum will be developed in the student learner management system, MyPortal, allowing for a seamless transition to offering an E-Degree.

Lake Area Technical College is a program sponsor for several apprenticeships and has the expertise and experience to work with the automotive industry to develop a quality apprenticeship program for E/V and Hybrid vehicles. Apprentices work under the direction of a highly-skilled mentor. Related training instruction can be delivered remotely through Teams Meeting or through MyPortal.

Both of these models will help meet demand throughout South Dakota for location bound students who cannot easily move to Watertown. The more flexible education models are important to ensure that technicians working in industry have access to this advanced technological training. ¹

CRITERION 4: ALIGNMENT

The program is vertically aligned to an education and training pathway.

- 4.1. The program is vertically aligned to an education and training pathway, reflecting efficient articulation of:
 - 4.1.1. Non-degree credential/industry certification
 - 4.1.2. Certificate to diploma
 - 4.1.3. Diploma to associate of applied science
 - 4.1.4. Associate of applied science to baccalaureate

4.1. Describe the alignment of the proposed program along an education and training pathway.

A. Complete Appendix 4.

B. Describe the projected alignment between the proposed program and existing academic programs within the technical college system.

After earning an Associates of Applied Science (AAS) in Automotive Technology, graduates are eligible to enroll in the Automotive Technology Electric Vehicles option. The AAS option is open to any individual who has earned an Automotive Technology AAS degree from an accredited college or equivalent automotive mechanic certification.

C. As applicable: Insert any additional comments here.

APPENDICES

- 2.A. Labor Market Information
- 2.B. Student Demand Projections
- 3. Program of Study
- 4. Alignment Projection
- Letters of Support
 - o South Dakota Auto Dealers Association
 - o Watertown Ford Chrysler
 - o Scherbenske Auto Repair, Inc.
 - o Aberdeen Chrysler Center
 - o Sioux Falls Ford Lincoln
- Supporting Documents
 - o Automotive Technology Semester Course Outline

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 2.A: Labor Market Information

Lake Area Technical College
 Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV) Long-term Certificate

SOUTH DAKOTA								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2018 EMPLOYMENT	2028 EMPLOYMENT	NUMERIC CHANGE: 2018-2028	PERCENT CHANGE: 2018-2028	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
00-0000	Total, All Occupations	62,664	491,588	526,251	34,663	7.1	\$36,823	\$44,961
49-3023	Automotive Service Technicians and Mechanics	244	2321	2441	120	5.20%	\$41,964	\$42,841

NATIONAL								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2019 EMPLOYMENT	2029 EMPLOYMENT	NUMERIC CHANGE: 2019-2029	PERCENT CHANGE: 2019-2029	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
49-3023	Automotive Service Technicians and Mechanics	69,000	703,800	705,900	2100	5%	\$44,050	Not Supplied

SOURCE: South Dakota Department of Labor and Regulation, Labor Market Information Center (LMIC) (<https://dlr.sd.gov/lmic/>)
DATE: September, 2021

SOURCE: U.S. Bureau of Labor Statistics, Occupational Outlook Handbook
 (<https://www.bls.gov/ooh/installation-maintenance-and-repair/automotive-service-technicians-and-mechanics.htm>)
DATE: September, 2021

NOTES: SD's Top 30 Hot Careers, (https://dlr.sd.gov/lmic/publications/general/top_30_hot_careers_2020.pdf) May, 2021

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION

Appendix 2.B: Student Demand Projections

Lake Area Technical College

Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV) Long-term Certificate

	YEAR 1	YEAR 2	YEAR 3
Student Full-Time Equivalent (FTE)*	10	12	14
Headcount: Full-Time	10	12	14
Headcount: Part-Time			
Headcount: Total	10	12	14
Total Program or Site Capacity	10	12	14

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION

Appendix 3: Program of Study

Lake Area Technical College

Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV) Long-term Certificate

MONTHS:	9
SEMESTERS:	2
TOTAL CREDITS:	30

PREFIX AND NUMBER	TITLE	CREDITS	DESCRIPTION	EXISTING COURSE
--------------------------	--------------	----------------	--------------------	------------------------

I. GENERAL EDUCATION CORE

N/A - General Education Courses will be obtained through completion the of the Automotive Technology A.A.S. degree prior to the long-term certificate program.

SUBTOTAL OF GENERAL EDUCATION CREDITS:	0	TOTAL NEW COURSES:	0
---	----------	---------------------------	----------

II. PROGRAM CORE

III. PROGRAM CREDITS				
AT 205	Introduction to E/V and Hybrid Vehicles	1	Introduction to E/V and Hybrid Vehicles. Comply with personal and environmental safety practices.	N
AT 211	Introduction to E/V and Hybrid Powertrains	3	Identify, name, and describe various components of the E/V and Hybrid vehicles' automatic transmission and how they interact to create a single operating component.	N
AT 213	E/V and Hybrid Powertrain Diagnostics	5	Recognize, identify, and interpret common E/V and Hybrid vehicles' transmission concerns and failures.	N
AT 223	Introduction to ReGen Braking and Electric Power Steering	2	Identify and describe the operation of and theoretical principles of E/V and Hybrid automotive brake systems, steering suspension, and drive axle systems.	N
AT 229	ReGen Braking and Electric Power Steering Diagnostics	4	Recognize, identify, and interpret the operation of E/V and Hybrid automotive brake systems, steering suspension, and drive axle systems.	N
AT 231	Introduction to Plug In E/V and Hybrid Fuel Cell Technology	2	Identify and describe the operation and theoretical principles of fuel cell size, combinations with additional power supply devices, and use as a secondary power source.	N
AT 235	Plug In E/V and Hybrid Fuel Cell Technology Diagnostics	3	Recognize, identify, and interpret the operation of fuel cell size, combining with additional power supply devices, and use as a secondary power source.	N
AT 237	Introduction to E/V and Hybrid Analyzing and Diagnosis	4	Test, analyze, and interpret engine performance related concerns on E/V and Hybrid automobiles.	N
AT 240	E/V and Hybrid Analyzing and Diagnosis Diagnostics I	3	Remove and replace E/V and Hybrid computer and computer components, ignition system components, and emission control systems on Hybrid cars.	N
AT 241	E/V and Hybrid Analyzing and Diagnosis Diagnostics II	3	Remove and replace E/V and Hybrid computer and computer components, ignition system components, and emission control systems on Hybrid cars.	N
SUBTOTAL OF PROGRAM CREDITS:		30	TOTAL NEW COURSES:	10

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION

Appendix 4: Alignment Projection

Lake Area Technical College

Automotive Technology - Hybrid, Electric, and Fuel Cell (EMV) Long-term Certificate

TOTAL CREDITS IN PROPOSED PROGRAM:

30

I. STACKABLE OPPORTUNITIES						
PROGRAM NAME						
Automotive Technology		Short-term Certificate	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program
		Long-term Certificate		Forthcoming		How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Diploma				
	X	AAS				

II. ARTICULATION AGREEMENTS (BACCALAUREATE)						
PROGRAM NAME	COLLEGE OR UNIVERSITY					
Bachelor of Arts in Applied Technology Management, 128 credits	Mt. Marty		Existing	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?
			Forthcoming		128	53
Operations Management, BS, 120 credits	Minnesota State University Moorhead	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?
			Forthcoming		120	67.5

III. LICENSURE AND CERTIFICATION OPPORTUNITIES		
<i>The PROPOSED PROGRAM will qualify students to pursue the following licensure and/or certification opportunities:</i>		
LICENSURE/CERTIFICATION	OVERSIGHT ORGANIZATION	Will the licensure/certification require reporting per SDCL 13-1-61?
ASE Certifications	Automotive Service Excellence	No



Voice of the Dealer in South Dakota Since 1918

September 17, 2021

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 575436

South Dakota Board of Technical Education Members:

The South Dakota Automobile Dealers Association is composed of 100% of the franchised dealerships in this state. The association has been in existence and representing franchised auto, truck, power sport and recreation vehicle dealers for over 100 years.

The transportation industry is evolving toward electric powered vehicles. This change in technology is presenting new challenges and a different type of technician that can meet these challenges. Future technicians will be dealing with double the voltages found in a typical home. These new vehicles will bring new service challenges that include huge batteries, electric motors, different comfort air conditioning and heating systems as well as brakes that function differently. Technicians of the future will need to be trained in an entirely new way.

Without doing a detailed survey of the membership, I cannot provide numbers as to individual dealership or collective dealership need for technicians, however I can predict there is and will be a great need for new technicians. Also, without doing a detailed survey of the membership, I cannot provide current or future salary numbers. Anecdotally, I do feel comfortable in stating that salaries in South Dakota franchised dealerships are usually leading salaries in their community.

On behalf of the 160 franchised dealerships in South Dakota, I offer that we are in support of the effort that Lake Area Technical College intends to offer a third year option to technicians that will prepare those students for the new electric vehicle challenges.

Sincerely,

A handwritten signature in blue ink, appearing to read "Myron L. Rau", is written over the word "Sincerely,".

Myron L. Rau
President
South Dakota Automobile Dealers Association

MLR:pkh



9/23/2021

Watertown Ford Chrysler
Scott Driscoll President/Owner
1600 9th Ave SE
Watertown, SD 57201
Scott@watertownfordchrysler.com
Office 605-886-5844
Cell 605-881-0308

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 57543

South Dakota Board of Technical Education Members:

Hi I'm Scott Driscoll the President and Owner of Watertown Ford Chrysler. I've been in the automotive retail sales and service business for 30 years and we are celebrating our 20th year in business here at Watertown Ford Chrysler this October.

I am in total support of a program designed to teach our students about maintaining and repairing electric vehicles. Although I never thought when they started talking about electric vehicles years ago that it would be that big of a deal it is! With the increased battery technologies and all of the other advancements that have come along I believe the electric vehicle is going to be the future of the automobile business.

We are already seeing an increased demand for technicians with the training and skills necessary to service these vehicles and that will only continue to increase in the future. And these are highly skilled positions that will pay very well. I would think a starting wage of the \$20-25 dollar range would make sense and as their knowledge and skills progress it will continue to go up from there. I would think in our dealership we will need at least 2-3 of these individuals in the next few years and the demand in larger metro markets will be much larger in my opinion.

I fully support Lake Area Technical College starting this program and really see it as one of the next big things in the auto industry.

Sincerely,

Scott Driscoll
Watertown Ford Chrysler
President



CHRYSLER



1600 9th Avenue SE • Watertown, SD 57201-5398
605.886.5844 • 1.800.658.3671 • www.watertownfordchrysler.com

Scherbenske Auto Repair Inc
909 8th St SE
Watertown, SD 57201



September 21, 2021

Shane Swenson
Lake Area Technical College
Watertown, SD 57201

Dear Mr. Swenson,

Electric vehicles have been around in some form since the invention of the automobile. As an industry, we have seen technology and sales of the electric and hybrid vehicle increase in recent years. Some of the reasons being lower prices and availability of these vehicles. Increase in fuel prices and Government regulations have also contributed to the increase interest in EV technology.

All this considered, consumers are buying and will continue to purchase EV technology. I believe technical schools need to implement a training program for hybrid and electric vehicles. The demand for highly trained technicians in this area will only increase. Young technicians need to be fully prepared for the future workforce demands of automotive repair. Implementing a training program would help insure they are ready.

Sincerely,

Bob Scherbenske
Scherbenske Auto Repair Inc



901 Auto Plaza Drive
PO Box 76
Aberdeen, SD 57401
605.225.1656

September 17, 2021

SD Board of Technical Education
800 Governors Dr
Pierre, SD 57501

SD Board of Technical Education Members:

Aberdeen Chrysler Center has been a leader in both vehicle sales and service in South Dakota for over 30 years. We are one of the largest dealerships in the state and provide a high level of after-sale service to our customers through our qualified service advisors and technicians.

The automotive industry is changing, trending towards electric vehicles that rely partially or totally on electricity to operate. This technology is coming and coming fast with vehicles already being sold and the idea of all vehicles being totally run-on electricity is soon. With this technology comes different service challenges and a different type of technician that can meet these challenges and new expectations. The most important aspect of servicing these is technician safety. Technicians will be dealing with voltages twice the amount that would be found in a typical home. Voltages can go as high as 800 volts which can be extremely dangerous to work with. The entire vehicle is different to service than what we are used to, from huge batteries and electric motors to drive the vehicle and completely different A/C and heating systems, as well as brakes that function differently than a traditional brake system. This new technician will need to be trained completely different than in the past. This training will need to be start sooner than later and will take several years to have technicians trained for the future.

Aberdeen Chrysler Center will need to expand current technician positions to meet the needs of the newer technology. We anticipate selling and servicing these types of vehicles in the next 3-5 years and will require re-training for our current technicians as well as adding additional technicians to our staff. This type of technician position will demand a higher wage than what we have traditionally paid a new graduate.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Schick", written over a light blue horizontal line.

Jeff Schick, Service Manager
Aberdeen Chrysler Center
901 Auto Plaza Drive
Aberdeen, SD 57401
605.380.7330 | jeff@aberdeenchrysler.com

www.aberdeenchrysler.com

SIoux FALLS



LINCOLN

nice
just ask around

September 23, 2021

Sioux Falls Ford Lincoln
Ed Bloom, President
4901 W. 26th St
Sioux Falls, SD 57106
ed@siouxfallsford.com
(605) 965-3636

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 575436

South Dakota Board of Technical Education Members:

Sioux Falls Ford Lincoln believes in community service. Since 1995, we've given willingly to and are actively involved in the support of our community because they provide us our success. In 2008, my father-in-law, Randy Nehring, recruited me into the family business. We are locally owned, and, for 26 consecutive years, we continue to be the number one nameplate brand in the growing Sioux Empire market. Our strategy is quite simple – create the feeling we want to earn our customers' business for life through best values, friendliest service, and being the most trustworthy.

The automotive industry is rapidly changing and, like it or not, manufacturers earmarked billions of dollars for electric vehicle (EV) research and development. Ford Motor Company recently launched their reservation system for the all-new F-150 Lightning which will be their first ever all-electric truck. After a few months, Sioux Falls Ford already has more than 125 Lightning reservations in our local market. To put it in perspective, a good month in terms of F-150 sales prior to COVID-19 was about 60 trucks. During an August '21 dealer principal meeting in Dallas, TX, Ford Motor Company admitted they woefully *underestimated* the initial demand for the F-150 Lightning.

In a recent study published by Carlisle & Company, thousands of dealerships (including Sioux Falls Ford Lincoln) from 11 OEMs were interviewed regarding Technician Retention. The extensive study concluded that investing in training, systems, and processes to keep Technicians happy may seem like a risky investment for dealerships under serious financial pressure. However, these investments lead to significant long-term savings and help fuel revenue growth.

At Sioux Falls Ford Lincoln, our goal is to be an industry leader in providing unmatched quality automotive products and services. To do so, we must constantly strive to meet the changing needs of our customers. Years ago, we spent over \$100,000 to become a certified electric Ford and Lincoln dealer. In addition, we invested heavily in training so our sales consultants understand the new complexities of EV at the time of purchase and delivery and our service technicians are keenly aware of some of the issues that may arise with EV.

In summary, Sioux Falls Ford Lincoln is committed to and proudly supports Lake Area Technical College's proposal to add Electrical Vehicle (EV) as a third-year option to the Automotive Technology program.

Respectfully,

A handwritten signature in black ink, appearing to read 'Ed Bloom', with a stylized, flowing script.

Ed Bloom

Automotive Technology

Semester Course Outline • 2021 – 2022

18 Months (4 Semesters) • Revised: 6/29/21

Associate of Applied Science (A.A.S.) Degree • Credits Required for Graduation: 71



First Year – Fall Semester Groups 1 and 2

Course Number	Course Title	Clock Hours	Credits
AT 100	Safety	14	.5

Group 1

Course Number	Course Title	Clock Hours	Credits
AT 107	Introduction to Brake Systems	70	2.5
AT 108	Brake Systems Diagnostics	84	3
AT 119	Introduction to Steering, Suspension, and Drivetrain Systems	98	3.5
AT 122	Steering, Suspension, and Drivetrain Diagnostics	140	5
■ CSC 102	Windows Applications for Technicians	45	3
Total		437	17

Group 2

Course Number	Course Title	Clock Hours	Credits
AT 146	Introduction to Heating and Air Conditioning	56	2
AT 148	Heating and Air Conditioning Diagnostics	84	3
AT 155	Introduction to Electrical/Electronic Systems	98	3.5
AT 156	Electrical/Electronic Systems Diagnostics	168	6
■ CSC 102	Windows Applications for Technicians	45	3
Total		465	17.5

First Year – Spring Semester

Group 1

Course Number	Course Title	Clock Hours	Credits
AT 146	Introduction to Heating and Air Conditioning	56	2
AT 148	Heating and Air Conditioning Diagnostics	84	3
AT 155	Introduction to Electrical/Electronic Systems	98	3.5
AT 156	Electrical/Electronic Systems Diagnostics	168	6
● MATH 100	Applied General Math	45	3
Total		465	17.5

Group 2

Course Number	Course Title	Clock Hours	Credits
AT 107	Introduction to Brake Systems	70	2.5
AT 108	Brake Systems Diagnostics	84	3
AT 119	Introduction to Steering, Suspension, and Drivetrain Systems	98	3.5
AT 122	Steering, Suspension, and Drivetrain Diagnostics	140	5
• MATH 100	Applied General Math	45	3
Total		437	17

Second Year – Fall Semester**Group 1**

Course Number	Course Title	Clock Hours	Credits
AT 201	Introduction to Manual Transmission/Transaxle	56	2
AT 208	Diagnosis of Manual Transmissions/Transaxle	56	2
AT 212	Introduction to Automatic Transmission/Transaxle	56	2
AT 217	Diagnosis of Automatic Transmissions/Transaxle	112	4
AT 221	Introduction to Engine Repair	56	2
AT 225	Engine Repair Diagnostics	84	3
• COMM 101	Communications and Career Strategies	45	3
Total		465	18

Group 2

Course Number	Course Title	Clock Hours	Credits
AT 259	Introduction to Engine Performance	112	4
AT 263	Engine Performance Diagnostics	224	8
• ECON 105	Leadership in the Global Workplace	45	3
• PSYC 100	Psychology of Human Relations	45	3
Total		426	18

Second Year – Spring Semester**Group 1**

Course Number	Course Title	Clock Hours	Credits
AT 259	Introduction to Engine Performance	112	4
AT 263	Engine Performance Diagnostics	224	8
• ECON 105	Leadership in the Global Workplace	45	3
• PSYC 100	Psychology of Human Relations	45	3
Total		426	18

Group 2

Course Number	Course Title	Clock Hours	Credits
AT 201	Introduction to Manual Transmission/Transaxle	56	2
AT 208	Diagnosis of Manual Transmissions/Transaxle	56	2
AT 212	Introduction to Automatic Transmission/Transaxle	56	2
AT 217	Diagnosis of Automatic Transmissions/Transaxle	112	4
AT 221	Introduction to Engine Repair	56	2
AT 225	Engine Repair Diagnostics	84	3
• COMM 101	Communications and Career Strategies	45	3
Total		465	18

Elective Course: With the instructor's approval, SCT 100 – Solar Car Team may be substituted for up to 6 credits of course work or taken as an additional elective.

- Students who transfer in two credits in computer science will take CSC 101 – Computer Essentials for 1 credit.
- Students will select a course in each of the areas listed to meet general education requirements. Courses marked with an asterisk (*) can be transferred directly to the university system and may be substituted for recommended courses on the outline. Students should speak with an advisor before doing so.

Students who select to take transferable communications course CMST 101 or ENGL 101, must also register for CSS 100 – Career Search Strategies for .5 credit. This curriculum is required for all Lake Area Tech graduates and is included in the COMM 101 course but is separate from the university system.

Behavioral Science

PSYC 101 – General Psychology *

Mathematics

MATH 101 – Intermediate Algebra

MATH 114 – College Algebra *

Communications

CMST 101 – Fundamentals of Speech * (CSS 100 – Career Search Strategies .5 credit)

ENGL 101 – Composition * (CSS 100 – Career Search Strategies .5 credit)

Social Science

ECON 201 – Principles of Microeconomics I *

ECON 202 – Principles of Macroeconomics II *

SOC 100 – Introduction to Sociology *

Automotive Technology

Third Year Option – Electric and Hybrid Vehicles

Semester Course Outline • 2023 – 2024

9 Months (2 Semesters) • Revised: 9/27/21

Credits Required: 35



Fall Semester

Course Number	Course Title	Clock Hours	Credits
AT 205	Introduction to Electric and Hybrid Vehicles		1
AT 211	Introduction to Electric Vehicles and Hybrid Powertrains		3
AT 213	Electric Vehicles and Hybrid Powertrain Diagnostics		6
AT 223	Introduction to ReGen Braking and Electric Powersteering		3
AT 229	ReGen Braking and Electric Powersteering Diagnostics		5
Total			18

Spring Semester

Course Number	Course Title	Clock Hours	Credits
AT 231	Introduction to Plug-in Electric Vehicles and Hybrid Fuel Cell Technology		2
AT 235	Plug-in Electric Vehicles and Hybrid Fuel Cell Technology Diagnostics		3
AT 237	Introduction to Electrical Vehicles and Hybrid Analyzing and Diagnosis		4
AT 240	Electric Vehicles and Hybrid Analyzing Diagnostics		8
Total			17